
Summary and Conclusion

Agricultural marketing is the final and most crucial stage in the agricultural production process, as it directly impacts farmers ability to earn a fair return on their investment. An efficient agricultural marketing system is vital for ensuring that farmers can maintain the availability of the right quantity and quality of agricultural produce in the market. However, the marketing systems face significant challenges. Therefore, to promote sustainable agricultural development, it is important to understand farmers' behaviour and practices in agricultural marketing. The objectives of the study were to examine the socio-economic characteristics of the farmers, identify the behaviour, Practices adopted and barriers experienced in vegetable marketing, assess their knowledge and opinion on agricultural marketing, impart educational awareness on agricultural marketing and assess the Impact of Education awareness on agricultural marketing among the Farmers.

The study area selected was the Barbaruah Development Block, located in the Dibrugarh district of Assam. Within this block, six villages were chosen under two Gram Panchayats: Walkhabi, Chawolkhowa NC and Lengapather under Bagibill Gram Panchayat and Bagibill, Tekela Chiring and Aaithan Dighala under Rajabheta Gram Panchayat. The researcher developed an interview schedule and conducted a pilot study with 40 farmers. A stratified random sampling method was adopted and 600 rural farmers engaged in vegetable cultivation and marketing were selected. A seven-day educational awareness programme was conducted to 50 farmers who expressed their willingness to participate.

The collected data were analyzed using statistical tests, including percentage analysis, mean, standard deviation, chi square (Association between socio economic characteristics with Marketing Practices and Marketing Behaviour), correlation (Relationship between socio economic characteristics and factors influencing Marketing Behaviour), Factor analysis (Factors Related to opinion of the Farmers on vegetable marketing), Garrett ranking (Barriers Experienced by the Farmers in Marketing

Vegetables, rank wise) paired sample t-test (Knowledge, Opinion and Marketing Behaviour of the farmers on Agricultural Marketing before and after educational awareness programme), one-way ANOVA (Significant differences between Knowledge, Opinion and Marketing Behaviour level before and after educational awareness programme based on socio economic characteristics).

FINDINGS OF THE STUDY ARE HIGHLIGHTED AS FOLLOWS:

General Profile of the Farmers

- Forty-one percent of the farmers were found to be in the 35-55 years age group, while only nineteen percent of farmers belonged to the under 30 years age group.
- Sixty-seven percent of the farmers were male, while the remaining thirty-four percent were female.
- Thirty-seven percent of the farmers belonged to the Other Backward Class (OBC) and the remaining six percent were from the More Other Backward Classes (MOBC).
- The majority (82%) of the farmers were Hindu and eighteen percent of the farmers belonged to Muslim religion.
- Forty-four percent of farmers had studied up to Higher secondary education and one percent of the farmers were illiterate.
- Ninety-three percent of the farmers were married, while six percent of the farmers were unmarried.
- Fifty-one percent of the farmers had 10-15 years of farming experience and forty-one percent had 5-10 years of experience in farming
- Sixty-seven percent of the farmers came from nuclear families, whereas thirty-three percent belonged to joint families.
- Sixty-two percent of the farmers belonged to medium-sized families (4-5 members), while five percent belonged to small families (2-3 members).
- Sixty percent of the farmers indicated that their father being the head of the family, while only one percent stated grandfather being the head of the family.
- Majority (81%) of the farmers considered agriculture as their primary occupation, while less than one percent engaged in teaching as well as farming.

- Fifty-eight percent of the families have two members engaged in agriculture, while five percent have only one member involved.
- Fifty-nine percent of the farmers earned between Rs (50,000 and 1 lakh) per annum, whereas twenty-four per cent earned less than Rs 50,000.

Existing Status of the Farmers

- The majority (96%) of the farmers possessed their own land, while four per cent of the farmers leased land. In terms of land size, forty-three percent of the farmers had 1-2 hectares of landholdings (small farmers), whereas seven per cent had more than 4 hectares (very large farmers).
- The distinct daily routines of rural men and women indicated that men were more involved in outdoor agricultural tasks such as feeding animals, labour and selling produce. Cent percent of both men and women farmers wake up between 4:00 and 4:30 am. Following this, from 4:30 to 5:30 am, the majority (75 %) focused on harvesting crops. From 5:30 to 6:30 am, eighty-eight percent of women tend to do household tasks. From 6:30 to 7:00 am, cent percent of women farmers take a bath. Between 7:00 and 8:00 am, both men and women farmers share breakfast together. From 8:00 am to 12:00 pm, Most (98%) of the women farmers engaged in daily labour. After fieldwork, seventy-five percent of the men farmers feed animals (cattle and goats). Both men and women farmers typically have lunch together from 12:30 to 1:00 pm. After lunch, sixty-two percent of men farmers go to the market to sell vegetables. Between 4:00 and 4:30 pm, fifty-six percent of women farmers take a rest. During the 4:30 to 5:00 pm slot, eighty-nine percent of women used to be busy with household activities. From 5:30 to 6:00 pm, most men (77%) and all women participate in informal discussions with their families. Between 6:00 and 7:30 pm, 98% of women prepare dinner in the kitchen. Both men and women have their meals together from 7:30 to 8:00 pm and go to sleep around 8:00 to 9:00 pm.
- Cent per cent of the farmers had owned basic agricultural tools such as yokes and spades and ninety-seven per cent had not owned a plough or a tractor. Based on the household items available, ninety-two percent and ninety-one percent of the farmers owned clocks and gas stoves, whereas ninety-eight percent of the farmers had not owned heaters or sewing machines. Ninety-eight percent of the farmers had owned bicycles, while fifty-seven percent had owned motorcycles and one percent of the

farmers in the area had not owned bullock carts, trucks, buses, or trolleys. Regarding communication media, ninety-eight percent of the farmers had predominantly used mobile phones, whereas ninety-nine percent of the farmers had not read magazines or books.

- Farmers reported the availability of village infrastructure facilities, with thirty-three percent stating that the type of road in their village included mud roads, blacktop roads and paver block roads. Thirty-nine percent of the farmers mentioned that the road conditions were good. Cent percent of the farmers had toilet facilities in their houses. Cent percent of the farmers stated that primary and junior secondary schools were available, but no senior secondary schools. Cent percent of the farmers reported that there were no public health centers, community health centers, or private nursing homes in the villages and there was no post office or internet café. However, cent percent of the farmers reported the presence of an Anganwadi center.
- Fifty-eight percent of the farmers relied on tube wells, while fifteen percent used pond water for irrigation. Ninety-three percent of the farmers opted for manual irrigation, whereas twenty-one percent of the farmers used localized irrigation methods such as drip and sprinkler systems. Ninety-six percent of the farmers indicated that they had not received any subsidies for water-saving technologies. Eighty-seven percent of the farmers reported experiencing seasonal irrigation pattern changes and cent percent of the farmers irrigated crops based on demand.
- Fifty-four percent of the farmers adopted an intercropping system. Ninety-five percent of the farmers reported changing crop patterns from year to year. Sixty percent reported that men made decisions regarding cropping patterns. Ninety-five percent of the farmers relied on hired labour for cultivation activities. Fifty-four percent depended on family labour for cultivation. Ninety-eight percent of the farmers cultivated seasonal crops and received quality produce advice from experienced farmers.
- With regard to the varieties of vegetables cultivated by the farmers, cent percent of the farmers cultivated coriander and thirty-nine percent of the farmers cultivated purslane as a leafy vegetable. Eighty-two percent of the farmers cultivated cauliflower and thirty nine percent of the farmers cultivated Kohlrabi (ulkoni) as cruciferous varieties. Eighty-four percent of the farmers cultivated cucumber and nineteen

percent cultivated green bitter gourd as fruit vegetables varieties. Sixty-two percent of the farmers cultivated potatoes and eighteen percent cultivated beet and turnip as root and tuber varieties. Sixteen percent of the farmers cultivated onions as bulb varieties, eighty-one percent cultivated green beans and fifty-four percent cultivated peas as pod and seed varieties.

- Sixty-five percent of the farmers used hybrid seeds for crop cultivation and eighty-five percent of the farmers purchased seeds from local seed stores. Sixty-eight percent of the farmers selected seed varieties due to better keeping and processing quality. Eighty-seven percent of the farmers used inorganic (chemical) fertilizers, with eighty-two percent used due to easy availability as the primary reason. Sixty-six percent of the farmers sourced fertilizers from agricultural supply stores. Cent percent of the farmers used inorganic pesticides, specifically insecticides and herbicides, with eighty-two percent choosing them due to easy availability. Cent percent of the farmers sourced pesticides from agricultural supply stores.
- Fifty-six percent of the farmers were not involved in any formal organization, while forty-four percent were members of an organization. Thirty-three percent of the farmers were members of Self-Help Groups (SHGs). Cent percent of the farmers participated in social activities, such as local festival celebrations. Sixty-six per cent of the farmers owned Kisan Credit Cards, while thirty-four per cent did not. Fifty percent used the cards to meet short-term credit requirements for crop cultivation, whereas only nine percent utilized them for selling and distributing their produce, particularly for marketing crops.
- Fifty-seven percent of the farmers attended training programmes, whereas forty-three percent did not attend any training programme. The number of training sessions attended by the farmers varied, thirty-three percent attended 2 to 3 days of training and forty-one percent received training on crop production. Fifty-seven percent of the farmers received training provided by the District Agricultural Offices and Krishi Vigyan Kendra.
- Eighty-nine percent of the farmers had a bank account and thirty-nine percent had an account in the State Bank of India. Cent per cent of the farmers' primary source of income was farming, while nine per cent also had an additional source of income from other family members. About fifty-six percent of the farmers were not satisfied

with their agricultural income. Cent percent of the farmers did not have any debts, as they managed their finances responsibly. Eighty-two percent of the farmers preferred to keep their savings as cash in hand and cent percent of the farmers saved money to meet their regular needs.

- Ninety-six percent of the farmers never read newspapers, while five percent read newspapers, primarily at tea stalls and shops. Ninety-nine percent of the farmers did not read magazines at all, while one percent read them once or twice a week. The primary source of magazines was tea stalls, which were read only for entertainment purposes. One percent of the farmers owned and listened to a radio once or twice a week, used occasionally for entertainment. Forty-five percent of the farmers do not watch television, while seventy-five percent owned a television. Forty percent of the farmers used Samsung phones and sixty-three percent purchased their phones within the price range of Rs. 1,000–5,000. Price was the main factor for ninety-seven percent of farmers when selecting a phone. Ninety-four percent of the farmers used their phones daily, with forty-six percent relying on Jio as their mobile operator. Sixty-four percent spent less than thirty minutes on their phones and ninety-seven percent primarily used them for phone calls and agricultural purposes.
- Most (86%) farmers had occasional contact with urban, while sixty percent occasionally contacted extension agencies. The primary reason for urban contact (86%) for agricultural and non-agricultural matters, whereas sixty percent contacted extension agencies solely for agricultural purposes.
- Cent percent of the farmers gathered under a tree for informal discussions, while thirty-six percent interacted through mobile SMS, local markets and temples. Also, five percent of the farmers meets in tea shops and the least, three percent, used to meet in banks.

Information about Marketing on Vegetable Produced

- Twenty-two percent of the farmers sold their produce to commission agents in the formal market, while forty-one percent sold their produce in village haats. Ninety-eight percent of the farmers received high prices as a benefit of their market channel. Sixty-seven percent of the farmers always found a market for all their goods. Sixty-seven percent of the farmers mentioned that the government determined market prices. Sixty percent of the farmers received market information prior to sales

and forty-five percent received information daily. Collaboration among farmers showed that seventy-four percent did not combine their produce with other farmers. Fifty-two percent of the farmers rated the available market infrastructure as 'bad' and fifty-eight percent occasionally used market information to plan their production and sales accordingly.

- The majority (89%) of the farmers regularly received information from relatives. Fifty-three percent of the farmers occasionally received information from input dealers, while one percent of the farmers never received any agricultural marketing information from NGO workers. Thirty-six percent of the farmers regularly received information from television, while thirty-three percent received it occasionally. Ninety percent of the farmers never received information from newspapers. Regarding sharing information, most (99%) of the farmers regularly shared agricultural information with their families. Seventy-two percent of the farmers occasionally shared information with all the known people, while eighty-one percent never shared information with farmers in neighboring villages.
- Most (92%) of the farmers preferred harvesting their vegetables in the early morning, between 4:00 and 9:00 AM. Ninety-four percent of the farmers sorted and graded their vegetables to remove diseased or damaged produce affected by insect attacks. Fifty-eight percent of the farmers did not wash their vegetables, while forty-two percent did, citing the removal of dirt and dust as the reason. About 91% of the farmers trimmed their vegetables to remove unwanted particles. Twenty-three percent of the farmers used pre-cooling to remove field heat after harvest. Sixty-one percent of the farmers did not undertake post-harvest disease control, while twenty percent did, citing the risk of infection by microorganisms.
- Fifty-seven percent of the farmers used electronic weighing machines. Forty-one percent utilized controlled or modified atmosphere storage methods, while cent percent of the farmers stored their produce at home. Fifty-three percent of the farmers had to travel between 11 and 30 kilometers to sell their vegetables. Thirty-four percent sold their produce primarily at nearby weekly markets, while forty-one percent sold to commission agents. Seventy-five percent of the farmers used jute (gunny) bags and bamboo baskets for packing vegetables during transportation. Forty-two percent used bicycles to transport vegetables to markets. Eighty-three percent of

the farmers received payment at the time of sale. Regarding the disposal of produce, sixty percent of the farmers disposed of their produce based on volume, whereas forty percent sorted and disposed of produce based on quality.

- A significant association was found between marketing practices and socio-economic characteristics. Educational qualification and land size showed a highly significant association at the 1% level, while annual income and farming experience showed a significant association at the 5% level. However, age, gender and marital status had no significant association with marketing practices. Therefore, the hypothesis (H1: There is a significant association between marketing practices and socio-economic characteristics of farmers) was accepted.
- Farmers highly prioritized determining the appropriate harvest time to preserve post-harvest longevity, with the highest mean score of 3.71. The highest mean score of 3.36 was recorded for crop damage due to physical injuries during harvesting in the field. Farmers identified a shortage of transport facilities as their most significant challenge, with the highest mean score of 3.95. Regarding packaging, the highest mean score of 4.31 was given for maintaining the overall quality of produce. In terms of sales timing, farmers preferred selling immediately after harvest, regardless of price fluctuations, with a mean score of 3.33. The primary reason for selecting a particular sale period was the high perishability of crops, which had a mean score of 3.97. Farmers chose their market primarily for higher price returns, reflected by a mean score of 3.13. The criterion for price determination was based on production costs, with the highest mean score of 4.45.
- Forty-seven percent of the farmers had a moderate level of marketing behaviour, while twenty-six percent exhibited a low level and twenty-seven percent exhibited a high level of marketing behaviour.
- A significant association was found between socioeconomic characteristics and marketing behaviour. Age, educational qualifications and annual income were significantly associated at the 5% level. Therefore, the hypothesis (H2: There is an association between socioeconomic characteristics and the level of marketing behaviour) was accepted.
- The key factors influencing farmers' marketing behaviour included income generation and sustainable livelihoods, which received the highest mean score of 3.00. In

contrast, accessible transport facilities for market access received the lowest mean score of 1.19, likely due to limited transportation options.

- An analysis of the relationship between socioeconomic characteristics and factors influencing marketing behaviour using zero-order correlation coefficients found that age and educational qualifications were significant at the 1% level, while land size was significant at the 5% level. Therefore, the hypothesis (H3: There is a relationship between socioeconomic characteristics and factors influencing marketing behaviour) is rejected.

Knowledge of the Farmers on Agricultural Marketing

- Ninety-eight percent of the farmers agreed that 'Vegetables were produced seasonally, but the market required products throughout the year'. Fifty-six percent of farmers remained neutral regarding the statement, 'Post-harvest losses of vegetables occurred at all points in the value chain from production to consumption,' while sixty-two percent disagreed with the statement, 'Retail markets had higher rates than wholesale markets.'
- Ninety-four percent of farmers agreed with the statement, 'National Agriculture Market or eNAM is an online trading platform available for farmers.' cent percent of the farmers remained neutral on the statements, 'e-Choupal connects rural farmers to the market via the internet for procuring agricultural products,' "AGMARKNET catered to the needs of farmers by providing agricultural-related information,' 'NAFED supports farmers by enduring profits and eliminating middlemen,' and 'KISAN is a one-stop information resource for farmers." Also, forty-three percent of farmers disagreed with the statement, 'KISAN RATH Mobile App was available for the transportation of agricultural produce.'
- Thirty-five percent of the farmers were aware of Agspeak and Agri apps. However, cent percent of farmers were unaware of PM Kisan GOI and Fasal Salah Agriculture app. Awareness regarding agricultural portals indicated that the majority (ninety-four percent) of farmers were somewhat aware of the National Agriculture Market (eNAM). On the other hand, eighty-nine percent of farmers were unaware of AGMARKNET.

Opinion of the Farmers on Agricultural Marketing

- The opinion of farmers on vegetable marketing found the highest mean value of 3.95 for the statement, 'Storage facilities for vegetable produce are sufficient,' and the lowest mean value of 1.89 for the statement, 'Standardization and grading increase the burden on farmers.'
- The identification of factors related to farmers' opinions on vegetable marketing revealed that the primary factor influencing their opinions on agricultural marketing was Factor 1, which had a significant loading on nine variables. This factor accounted for approximately 40% of the variance and was associated with knowledge of preservation, the lesser role of women than men, good transportation, the role of advertisement and promotion in increasing sales, helping consumers understand products, obtaining good prices, better marketing facilities, selling products at the nearest market and producing products based on demand.
- The opinion of farmers on digital agricultural marketing indicated that the statement, 'Helps in marketing agricultural products through mobile phones,' had the highest mean value of 4.36, whereas the statement, 'Assists in evaluating, organizing and facilitating easy marketing of agricultural products,' had the lowest mean value of 2.72 among all the statements.

Barriers experienced by the Farmers in Marketing Vegetables.

- The production barriers experienced by farmers were ranked, with 'High cost of inputs' placed first with a Garrett score of 77.69, while the lowest-ranked barrier, in tenth place, was 'Non-availability of tractors for ploughing at the required time.'
- The economic barriers perceived by farmers showed that 'not enough profit' was ranked first with a Garrett score of 64.65, whereas 'High cost of packaging material' was ranked last, in 12th place.
- Among the communication barriers, 'Inaccessibility to market-related information from distributors/retailers/suppliers/input dealers' was ranked first with a Garrett score of 76.89. In contrast, 'Delay in cash payment by middlemen' was ranked the lowest, eighth place.
- The storage and transportation barriers faced by farmers were ranked, with 'Timely unavailability of transportation' placed first with a Garrett score of 71. whereas the lowest-ranked barrier, in ninth place, was 'Inadequate storage facilities.'

- The marketing barriers perceived by farmers showed that 'High perishability of produce' was ranked first, with a Garrett score of 84.4, while 'Lack of regulated markets' was ranked in fifteenth.

Suggestions offered by farmers to overcome marketing Problems.

- Ninety-eight percent of the farmers recommended setting up local marketplaces (mandis) in nearby areas and eleven percent suggested the distribution of electronic weighing scales for more accurate measurements.

Impact of Educational Awareness on Knowledge, Opinion and Marketing Behaviour in Agricultural Marketing

- The analysis of the Impact of Knowledge on Vegetable Marketing revealed that the mean differences in scores for all ten statements before and after the educational awareness were statistically significant at the 1% level, with a p-value less than 0.001.
- The impact of knowledge of digital agricultural marketing on all aspects of farmers' knowledge showed significant improvement. The differences in mean scores before and after the educational awareness had p-values less than 0.001, signifying statistically significant at the 1% level.
- The Knowledge of Government Schemes and Programmes on agriculture indicated a significant increase in educational awareness. Seventeen schemes (FPO, Pradhan Mantri Krishi Sinchayee Yojana, PMFBY, PKVY, Pradhan Mantri Kisan SAMPADA Yojana, PM Kisan, RKVY, MOVCD, MMKSY, CGFS, MRIN, HMNEH, EGS, ISAM, CMSGUY, APART, NMSA), out of eighteen schemes had p-values less than 0.001, statistically significant at the 1% level. However, the 'Submission on Agricultural Mechanization (SMAM) had a p-value of 0.020, which is significant at the 5% level.
- The Knowledge of Agricultural Applications and Portals found that the calculated p-values for farmers' knowledge on various apps (APEDA, IFFCO Kisan Agriculture, Agri App, Pusa Krishi App, Crop Insurance App, Kisan Suvidha App, Krishi Network: Smart Kisan, AgSpeak, Agri-Market App, PMKISAN GOI, Fasal Salah App and Kisan Rath App) and portals (KisanMandi.com, National Agriculture Market or eNAM and Agricultural Marketing Information Network

(AGMARKNET), Govt. of Assam, Dept. of Agriculture & Horticulture) were all below 0.001, statistically significant at the 1% level. This implied that the educational awareness positively impacted farmers' perceptions of digital marketing in agriculture.

- The relationship Between Socioeconomic Characteristics and Knowledge Levels found significant differences before and after the awareness concerning age and years of experience, with p-values less than 0.001, which were statistically significant at the 1% level. Educational qualifications also significantly impacted knowledge after the educational intervention, significant at the 5% level. However, gender, annual income and land size showed no significant differences in knowledge levels before or after the intervention. Therefore, the hypothesis (H4: There will be a significant difference before and after educational awareness based on socioeconomic characteristics with Knowledge, Opinion and Marketing Behaviour level among the Farmers) was accepted.
- The opinion of the farmers on vegetable marketing before and after the educational intervention found that nineteen statements were statistically significant at the 1% level, with p-values less than 0.001. However, the statement "One should sell products to the nearest market regardless of price" was found to be non-significant.
- The opinion of the farmers on digital agricultural marketing before and after the educational awareness identified that all ten statements had significant increases and normally distributed differences in mean scores were found with the P value less than 0.00, at a 1% significant level.
- The significant difference between the Opinion level and Socioeconomic Characteristics of the Farmers revealed the significant difference between age at a 5 % level, educational qualification and years of experience at a 1 % level. While gender, annual income and land size showed no significant differences in opinion levels before or after the educational awareness. Thus, the hypothesis (H4: There will be a significant difference before and after educational awareness based on socioeconomic characteristics with Knowledge, Opinion and Marketing Behaviour level among the Farmers) was accepted.

- All the aspects of marketing behaviour such as harvesting, sorting and grading, storage purpose, vegetable packaging, timing of sales, reasons for selecting specific periods, market choice and pricing criteria showed significant differences at 1% level, with p-values consistently below 0.01.
- The significant difference between the level of marketing behaviour and the Socioeconomic characteristics of the farmers revealed that educational qualification and years of experience exhibited significant differences with marketing behaviour at a 1 % level of significance after the educational awareness. Whereas, annual income and land size indicates significant differences with marketing behaviour at 5 % level. The remaining variables age and gender exhibited a non-significant contribution on marketing behaviour level of the farmers before or after the educational awareness. Hence, the hypothesis (H5: There will be a significant difference before and after educational awareness based on socioeconomic characteristics with Knowledge, Opinion and Marketing Behaviour level among the Farmers) was accepted.
- The overall score of the knowledge, opinion and marketing behaviour indicated a substantial rise in the mean score and was highly significant at 1 % level since the p-value was less than .001. Thus, the hypothesis (H4: There will be an impact of Knowledge, Opinion and Marketing Behaviour among the Farmers on Agricultural Marketing before and after the educational awareness programme) was accepted.

Conclusion

Marketing practices and behaviour are crucial in connecting farmers with consumers, ensuring consistent demand and sales for their produce. The study found that farmers exhibit a medium level of marketing behaviour. A comparison of farmers' socioeconomic characteristics and their marketing behaviour found significant associations between them. Education and land size showed a highly significant association with marketing practices at the 1% level, whereas annual income and farming experience exhibited a significant association with marketing practices at the 5% level. Factors influencing farmers' marketing behaviour were income generation and sustainable livelihoods, with the highest mean score of 3.00. Key barriers faced by the farmers include high input costs, insufficient profit, limited access to market information, inadequate transportation facilities and the high perishability of their produce.

Digital marketing offers real-time updates on produce and enhances demand forecasting, while traditional methods like farmers' markets cater to consumers who prefer selecting produce in person. Educational awareness of agricultural and digital marketing has positively impacted farmers. The impact of knowledge, opinion and marketing behaviour on agricultural marketing found a significant increase after educational awareness, as indicated by the substantial rise in the mean score and high significance at the 1% level. Continued investment in educational awareness can provide smallholder farmers with reliable markets and fair prices. These initiatives have collectively empowered farmers to make strategic marketing decisions, leading to sustainable livelihood for farmers.

The Recommendation emerged out are given below:

To Government officials

- Develop infrastructure such as market yards, warehouses, cold storage facilities and transportation networks to reduce post-harvest losses.
- Conduct training and capacity-building programmes for farmers to improve their marketing skills, financial literacy and utilization of apps.
- Educate farmers on using digital tools to access market information and sell their produce online.
- Promote forming and strengthening Farmer Producer Organizations (FPOs) in the Panchayats.
- Establish agro-processing units at the village level to add value to vegetables

NGO's

- Provide training on modern agricultural practices and post-harvest handling techniques.
- Facilitate microfinance services to help farmers invest in better inputs and technology.
- Create platforms to connect farmers with potential buyers (wholesalers, retailers and food processing companies).

Farmers

- Improve post-harvest handling like proper cleaning, sorting, grading and packaging to maintain the quality and freshness of produce.

- Participate in local farmers markets to sell directly to consumers for better prices and customer relationships.
- Network with other farmers, traders and agricultural experts to share knowledge, resources and market opportunities.
- Avoid middleman and supply directly to consumers.

Future Research Recommendation

- Conduct Comparative Studies to Identify Region-Specific Challenges and Opportunities.
- Analyze the Dynamics Between Farmers and Market Intermediaries
- Examine the level of technology adoption and its impact on market prices and farmers income.
- Explore how storage facilities, transportation and timely access to markets can reduce losses and improve the profitability of rural farmers.
- Understand consumer behaviour in local, regional and national markets to help farmers adopt more demand-driven marketing practices.
- Investigate the effectiveness of various digital marketing strategies, such as the use of social media platforms, e-commerce websites and mobile applications, in promoting agricultural products and services.